DEC 5 8 5003

Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
rs: Friedl et al.
40.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
SHEET 1 OF 29

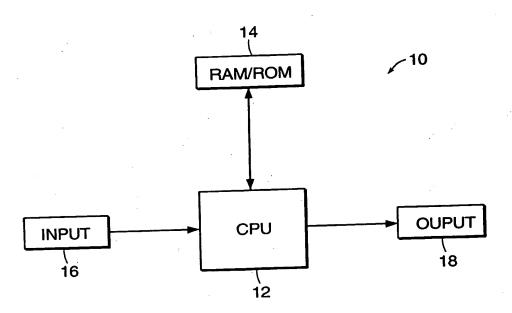
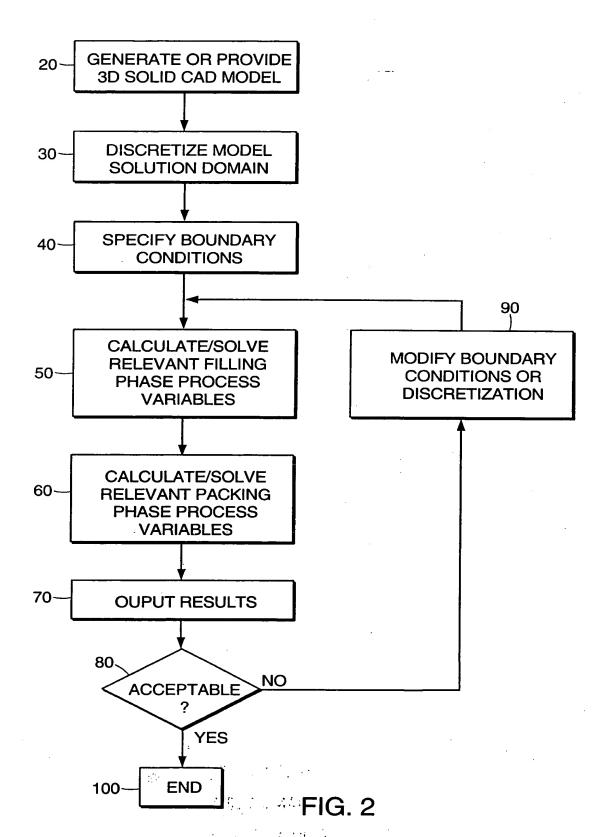


FIG. 1

Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity

Inventors: Friedl et al. Serial No.: 09/404,932 Atty Docket No.: MFL-001 Atty.: William R. Haulbrook, Ph.D.

Express Mail Mailing Label No.: EL 988705086 US SHEET 2 OF 29





Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
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SHEET 3 OF 29

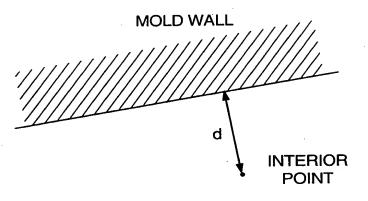
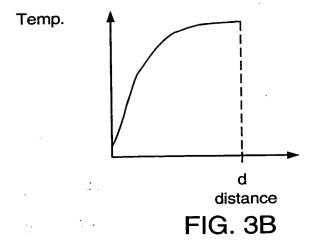
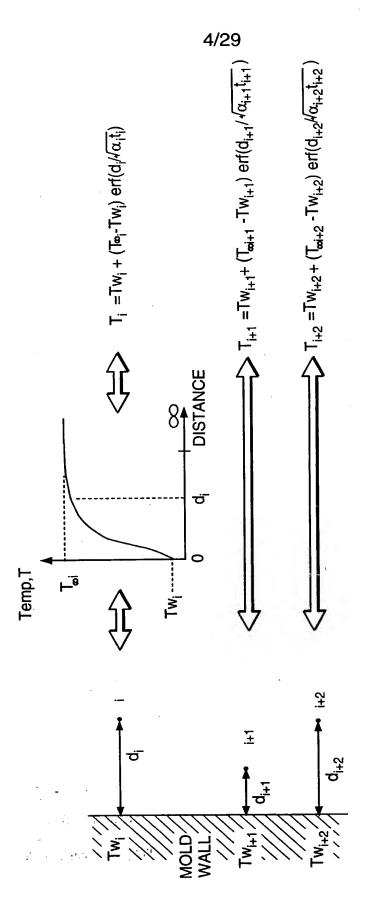


FIG. 3A



Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity

in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity

In a Motor Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.

Express Mail Mailing Label No.: EL 988705086 US

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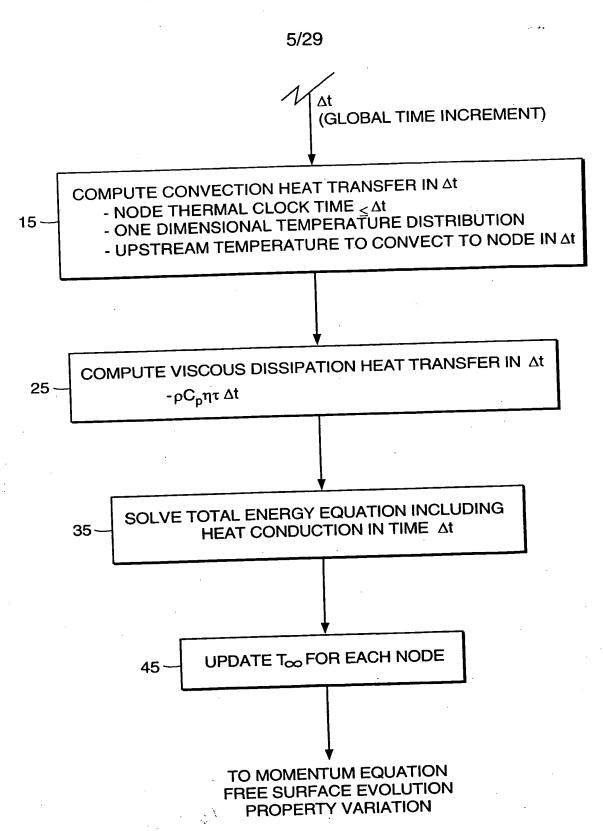
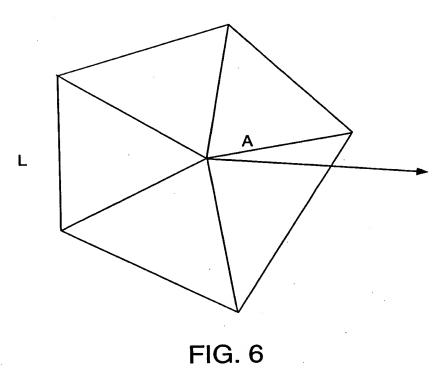


FIG. 5



Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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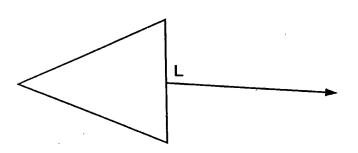
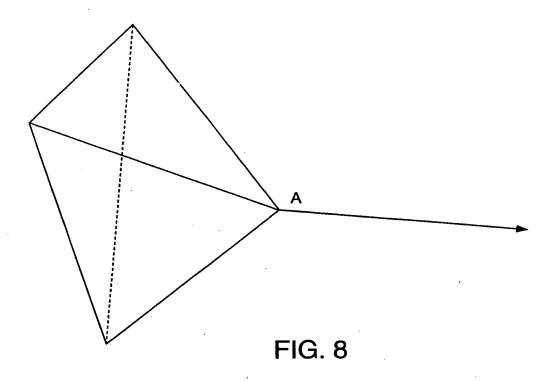
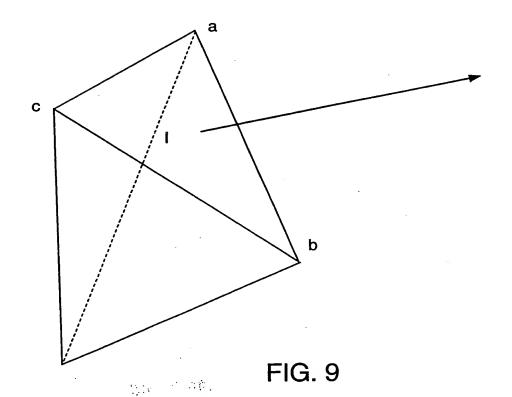


FIG. 7

Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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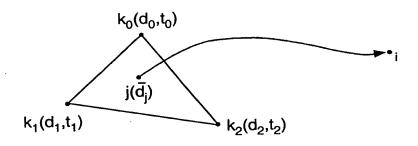




Inventors: Friedl et al. Serial No.: 09/404,932 Atty Docket No.: MFL-001 Atty: William R. Haulbrook, Ph.D. Express Mail Mailing Label No.: EL 988705086 US SHEET 8 OF 29

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MOLD WALL



i = TARGET NODE j = UPSTREAM POINT

 k_0, k_1, k_2 = NODES OF ELEMENT CONTAINING THE UPSTREAM POINT $(d_0,t_0)(d_1,t_1)(d_2,t_2)$ ARE THE DISTANCE TO THE WALL AND NODE THERMAL CLOCK TIMES FOR EACH UPSTREAM NODE RESPECTIVELY d=INTERPOLATED DISTANCE TO THE WALL OF THE UPSTREAM POINT

FIG. 10A

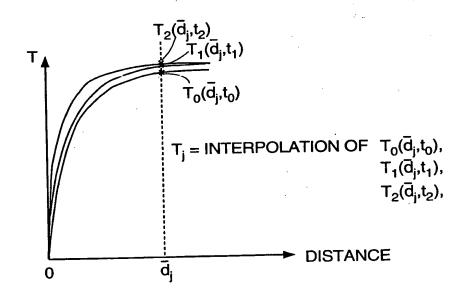


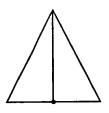
FIG. 10B



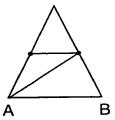
in a Mold Cavity Inventors: Friedl et al. Atty: William R. Haulbrook, Ph.D.
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FOR A FACE WITH ONE EDGE REFINED:



FOR A FACE WITH TWO EDGES REFINED: WHERE A < B



FOR A FACE WITH ALL THREE EDGES REFINED

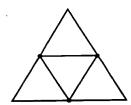


FIG. 11



Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
SHEET 10 OF 29

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TEMPLATE FOR SPLITTING A TET ON:

1 EDGE:

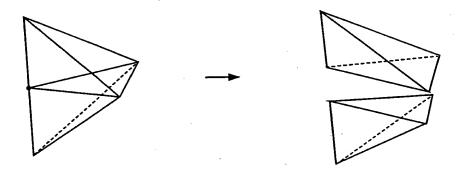


FIG. 12



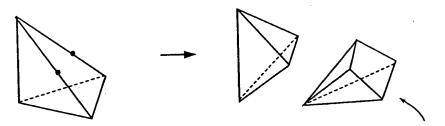
Title: Method and Apparatus for Modeling Injections in a Mold Cavity Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US

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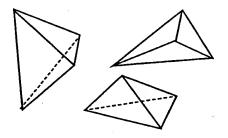
TEMPLATE FOR SPLITTING A TET ON

2 EDGES



NOTE THAT THERE IS A TEMPLATE FOR SPLITTING THE FOUR-SIDED BASE PYRAMID

THIS RESULTS IN:



AS A CLOSED GROUP WITH NEW EDGES MARK

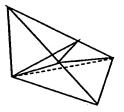


FIG. 13A



Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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TEMPLATE FOR SPLITTING A "FOUR-SIDED BASE" PYRAMID

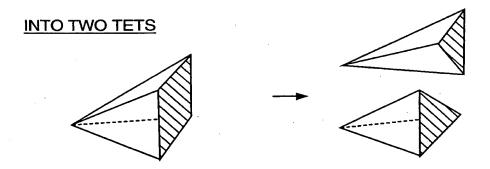


FIG. 13B

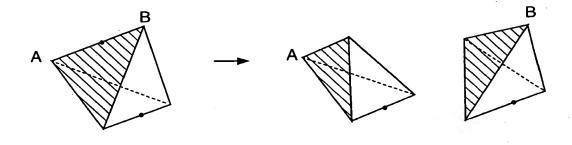


in a Mold Cavity in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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TEMPLATE FOR SPLITTING A TET ON

2 EDGES (OPPOSITE)



THE FINAL COMPACT RESULT WILL BE:

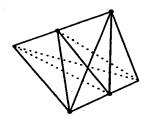


FIG. 13C

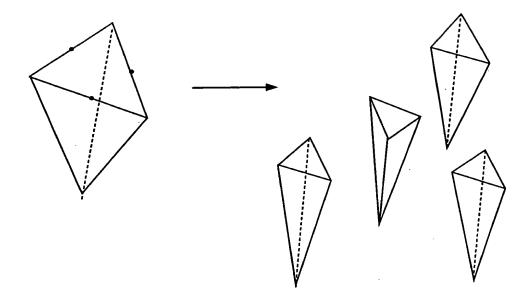


Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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TEMPLATE FOR SPLITTING A TET ON:

3 EDGES (SHARED FACE)



IN CLOSED FORM

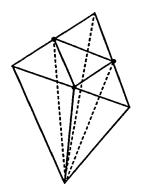


FIG. 14A



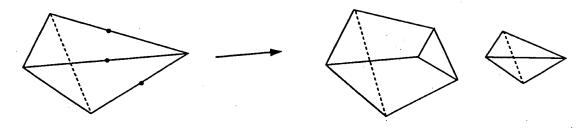
Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001

Atty.: William R. Haulbrook, Ph.D. Express Mail Mailing Label No.: EL 988705086 US SHEET 15 OF 29

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TEMPLATE FOR SPLITTING A TET ON:

3 EDGES (NON-SHARED FACE)



THE FINAL RESULT WILL BE:

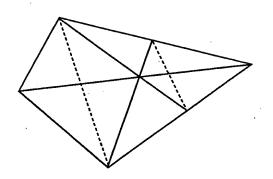


FIG. 14B

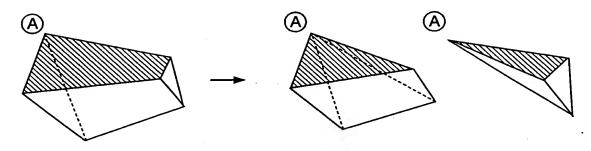


in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US

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TEMPLATE FOR SPLITTING A TRIANGULAR PRISM



THEREFORE THE FINAL RESULT WOULD BE:

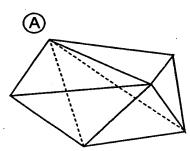


FIG. 14C

in a Mold Cavity Inventors: Friedl et al. Serial No.: 09/404,932 Atty Docket No.: MFL-001 Atty.: William R. Haulbrook, Ph.D.

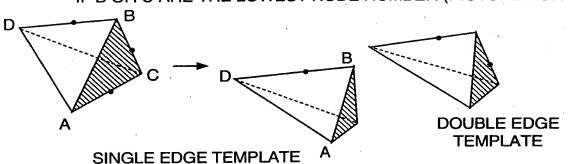
Express Mail Mailing Label No.: EL 988705086 US SHEET 17 OF 29

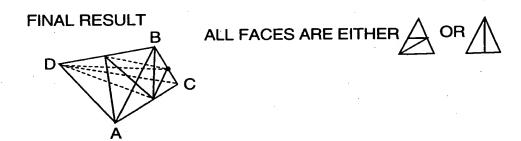
17/29

TEMPLATE FOR SPLITTING A TET ON

3 EDGES (IN SERIES) NON FACE, NON SHARED POINT

* IF B OR C ARE THE LOWEST NODE NUMBER (PICTURE FOR B)





* IF A OR D ARE THE LOWEST NODE MEMBER

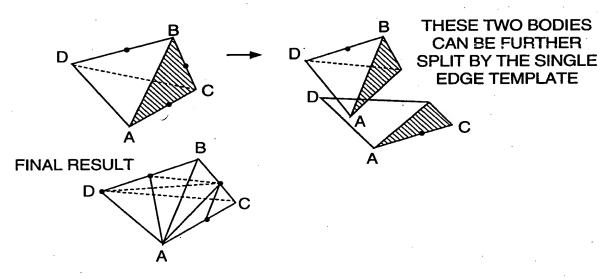


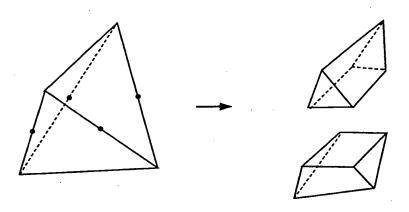
FIG. 14D



in a Mold Cavity Inventors: Friedl et al. Arty Docket No.: 09/404,932
Arty Docket No.: MFL-001
Atty:: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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TEMPLATE FOR SPLITTING A TET ON 4 EDGES (OPPOSITE EDGES)



THE EVENTUAL SPLIT BODY IN CLOSED FORM

THE PATTERN ON EACH ORIGINAL TRIANGLE FACE IS:

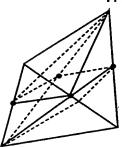




FIG. 15A



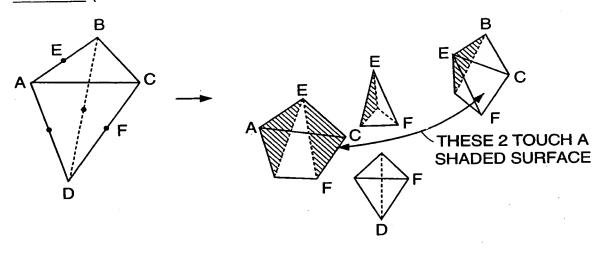
Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
Inventors: Friedl et al.

Serial No.: 09/404,932 Atty Docket No.: MFL-001 Atty: William R. Haulbrook, Ph.D. Express Mail Mailing Label No.: EL 988705086 US SHEET 19 OF 29

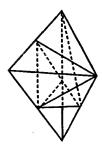
19/29

TEMPLATE FOR SPLITTING A TET ON

4 EDGES (ADJACENT EDGES)



THE COMPACTED ORIGINAL TET IS:



FACES APPEAR AS

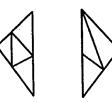






FIG. 15B



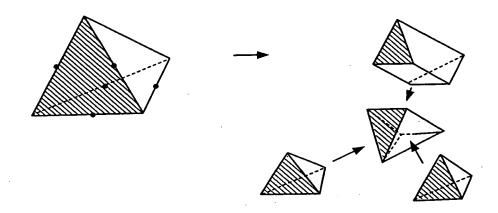
Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity

in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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TEMPLATE FOR SPLITTING A TET ON:

5 EDGES



THE FINAL COMPACTED RESULT IS:

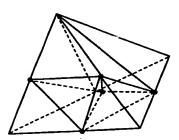


FIG. 16

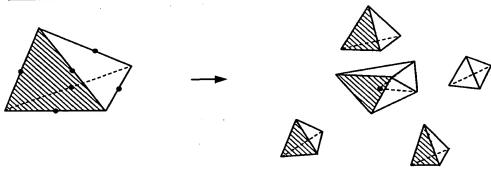
Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity

In a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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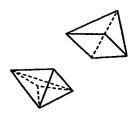
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TEMPLATE FOR SPLITTING A TET ON

6 EDGES







THE RESULTING COMPACTED BODY IS:

ALL FACES HAVE THE FOLLOW SPLIT PATTERN



FIG. 17



Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 0*1/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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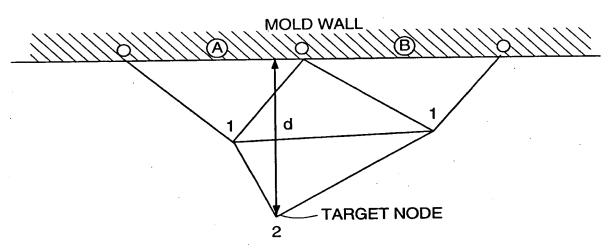


FIG. 18A

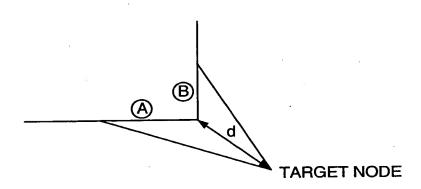
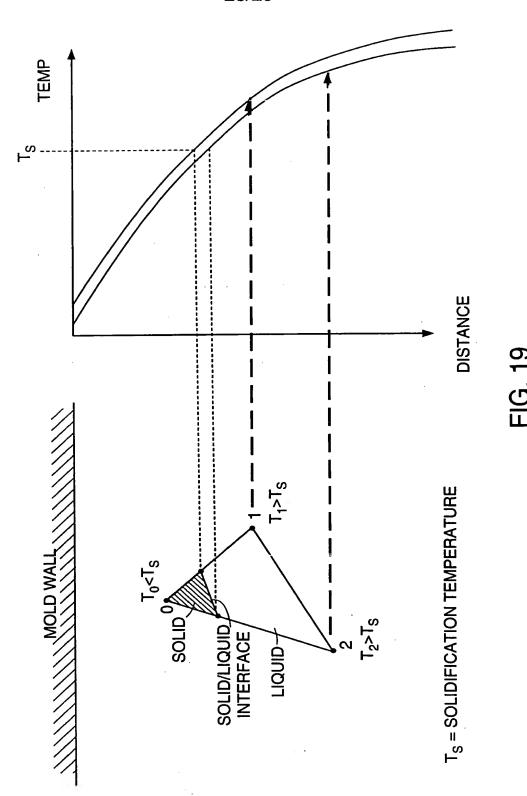


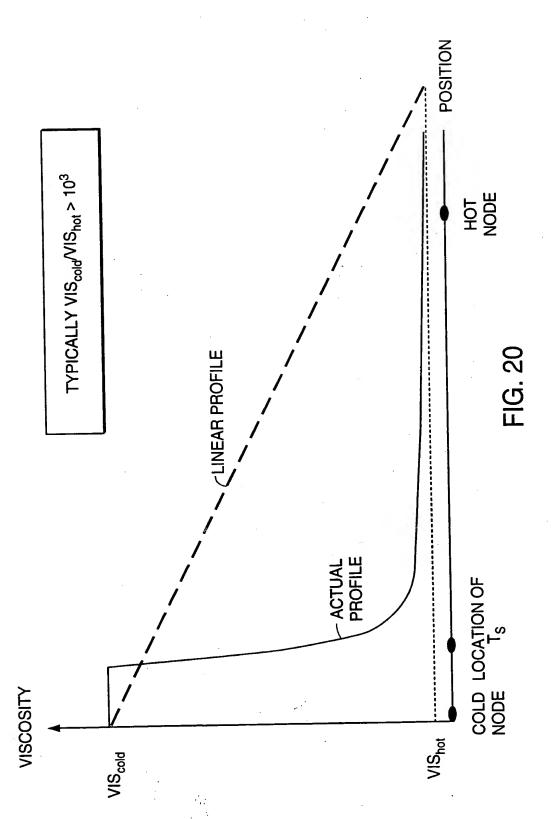
FIG. 18B

Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity Inventors: Friedl et al. Serial No.: 09/404,932 Atty Docket No.: MFL-001 Atty.: William R. Haulbrook, Ph.D. Express Mail Mailing Label No.: EL 988705086 US SHEET 23 OF 29





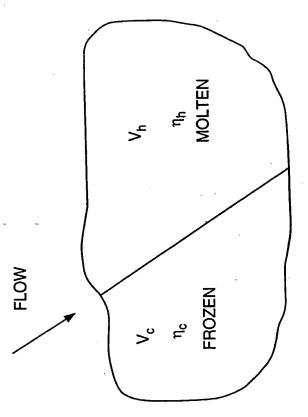
Ittle: Method and Apparatus for Modeling Injection in a Mold Cavity
Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity Inventors: Friedl et al.
Serial No.: 09/404,932
Atty Docket No.: MFL-001
Atty.: William R. Haulbrook, Ph.D.
Express Mail Mailing Label No.: EL 988705086 US
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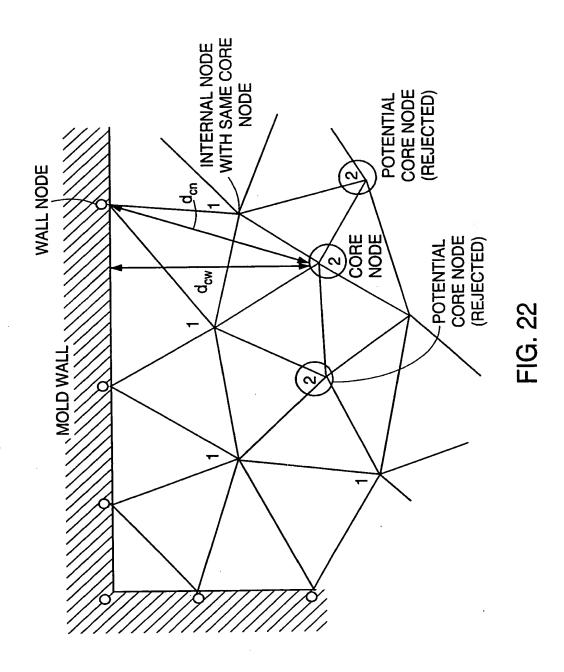




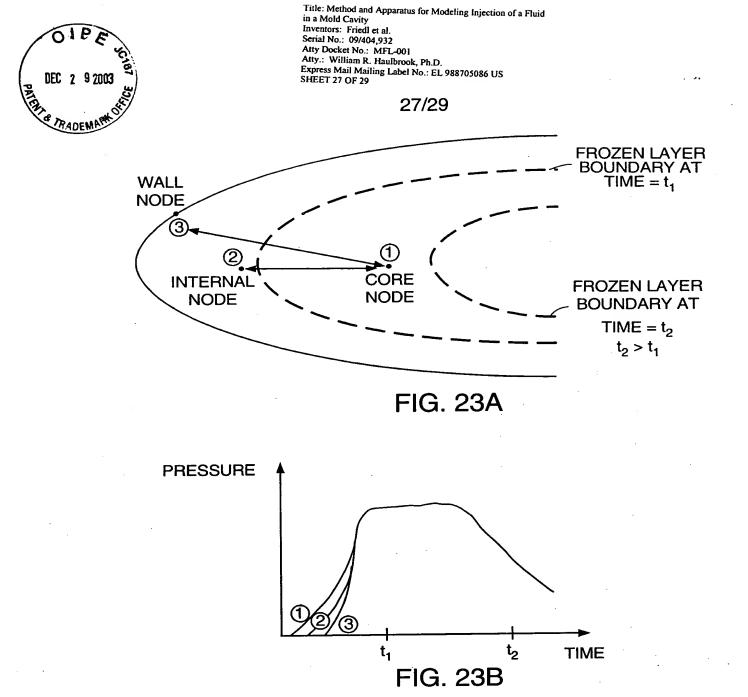


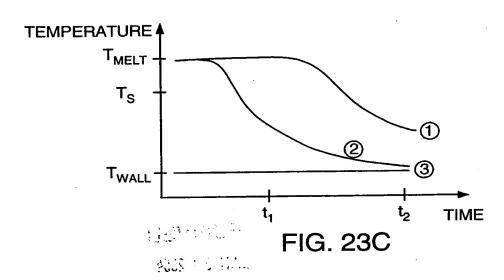
Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity Inventors: Friedl et al. Serial No.: 09/404,932 Atty Docket No.: MFL-001 Atty.: William R. Haulbrook, Ph.D. Express Mail Mailing Label No.: EL 988705086 US SHEET 26 OF 29

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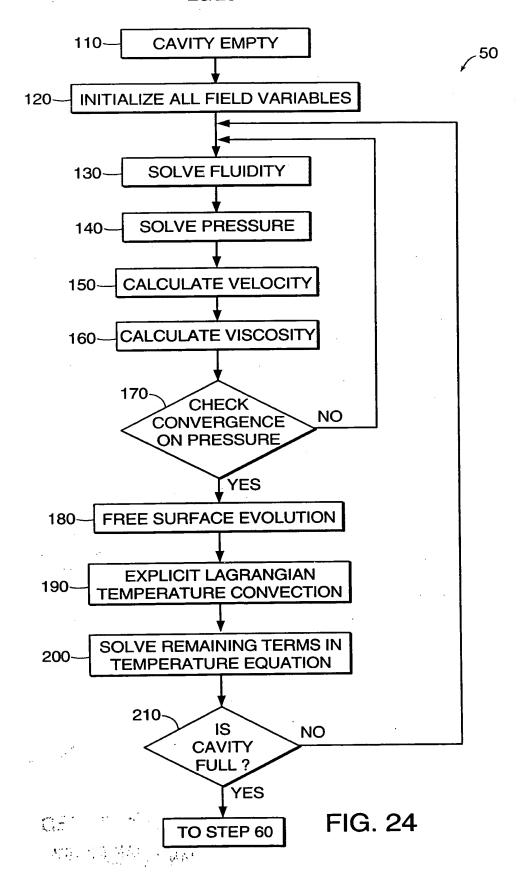
Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity

in a Mold Cavity Inventors: Friedl et al. Serial No.: 09/404,932

Atty Docket No.: MFL-001 Atty.: William R. Haulbrook, Ph.D.

Express Mail Mailing Label No.: EL 988705086 US

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Title: Method and Apparatus for Modeling Injection of a Fluid in a Mold Cavity

Inventors: Friedl et al. Serial No.: 09/404,932 Atty Docket No.: MFL-001

Atty.: William R. Haulbrook, Ph.D. Express Mail Mailing Label No.: EL 988705086 US

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